

Chapter 10

Section 5

Factoring Polynomials with Distributive Property

GCF

Factoring

- Factoring means to find what to multiply to get an expression.
- This section will focus on factoring out a GCF.
- GCF = Greatest Common Factor

What distributive property problem would yield this result?

$$6x + 8 \quad 2(3x + 4)$$


$$\rightarrow 2x(x + 2)$$

Factor

Ex. 1) $\frac{12a^2}{4a} + \frac{16a}{4a}$

$$4a(3a + 4)$$

Ex. 2) $18cd^2 + 12c^2d + 9cd$

$$3cd(6d + 4c + 3)$$

Factor Completely

$$16a + 4b = 4(4a + b)$$

$$12x^2y^2z + 40xy^3z^2$$

$$= 4xy^2z(3x + 10yz)$$

$$12ax^3 + 20bx^2 + 32cx$$

$$= 4x(3ax^2 + 5bx + 8c)$$

$$15g^2h - 6gh^2 + 12gh$$

$$= 3gh(5g - 2h + 4)$$



When factoring a polynomial with four terms that has no GCF, it can be factored by grouping the terms together.

Steps

1. Group the polynomial using ()
2. Factor the GCF of each binomial
3. Factor out the common binomial

Lets try to factor...

$$6xy - 8x + 15y - 20$$

1. Group the polynomial using ()

$$(6xy - 8x) + (15y - 20)$$

2. Factor the GCF of each binomial

$$(6xy - 8x) \overset{\downarrow}{(+15y - 20)}$$

$$\text{GCF} = 2x(3y - 4) \quad \text{GCF} = 5(3y - 4)$$

Did you notice the parenthesis guys are the same?...

3. Factor out the common binomial

$$2x(3y - 4) + 5(3y - 4)$$



LOOK!

$$(2x + 5)(3y - 4)$$

You Try!

Factor Completely

$$1. (12a^2 - 15ab) \overset{\text{watch}}{(-16a + 20b)}$$

$$3a(4a - 5b) - 4(4a - 5b)$$

$$\boxed{(3a - 4)(4a - 5b)}$$

$$2. (-6mn + 4m)(+18n - 12)$$

$$-2m(3n - 2) + 6(3n - 2)$$

$$(-2m + 6)(3n - 2)$$

$$3. \overset{x^2 + 6x + 8}{(x^2 + 4x)(+2x + 8)}$$

$$x(x + 4) + 2(x + 4)$$

$$(x + 2)(x + 4)$$

$$4. \overset{2a^2 + 9a + 9}{(2a^2 + 3a)(+6a + 9)}$$

$$a(2a + 3) + 3(2a + 3)$$

$$(a + 3)(2a + 3)$$